CLAIMS

What is claimed is:

1. An overcoating composition comprising an anionic aqueous polyurethane dispersion.

2. The overcoating composition of claim 1, wherein the anionic aqueous polyurethane dispersion is obtained by reacting at least one acid anhydride with or without a double bond with at least one kind of triol or tetraol derivatives to prepare a diol or triol monomer, or a mixture thereof containing a carboxyl group or containing both a carboxyl group and a double bond, reacting the resulting product with polyol, and diisocyanate or diisocyanate polymer to acquire a polyurethane prepolymer, neutralizing a carboxylic group of the acquired polyurethane prepolymer using a neutralizer and dispersing the same in water, followed by chain-extending using a chain extending agent.

3. The overcoating composition of claim 2, wherein the neutralizer is water-soluble tertiary amine, alkali metal hydroxide or a mixture thereof.

4. The overcoating composition of claim 2, wherein the chain extending agent is at least one selected from the group consisting of diol, triol, diamine, triamine, hydrazine and dihydrazide and having two reactive hydrogen atoms and having a molecular weight of 18 to 250.

5. The overcoating composition of claim 2, wherein an NCO content of the polyurethane prepolymer acquired is 0.1 to 30%.

6. The overcoating composition of claim 2, wherein water is used during dispersion for a total solid content to be 5 to 80% and a temperature of the water is in the range of 5 to 80°C.

7. The overcoating composition of claim 1, further comprising a polymerization initiator.

8. The overcoating composition of claim 1, further comprising water or a mixed solvent of water and alcohol for dilution, the water or mixed solvent being used for a total solid content of the overcoating composition to be 1 to 15%.

9. An organic photoreceptor comprising a photosensitive layer having an overcoat layer using an overcoating composition comprising an anionic aqueous polyurethane dispersion.

10. The organic photoreceptor of claim 9, wherein the overcoat layer has a thickness of 0.1 to 5 μm.

11. The organic photoreceptor of claim 9, wherein the photosensitive layer has a single- layered structure having a charge generating material and a charge transport material.

12. The organic photoreceptor of claim 9, wherein the photosensitive layer has a dual-layered structure having a charge transport layer including a charge transport material and a charge-generating layer including a charge-generating material.

13. The organic photoreceptor of claim 9, wherein the anionic aqueous polyurethane dispersion is obtained by reacting at least one acid anhydride with or without a double bond with at least one kind of triol or tetraol derivatives to prepare a diol or triol monomer, or a mixture thereof containing a carboxyl group or containing both a carboxyl group and a double bond, reacting the resulting product with polyol, and diisocyanate or diisocyanate polymer to acquire a polyurethane prepolymer, neutralizing a carboxylic group of the acquired polyurethane prepolymer using a neutralizer and dispersing the same in water, followed by chain-extending using a chain extending agent.

14. The organic photoreceptor of claim 13, wherein the neutralizer is water-soluble tertiary amine, alkali metal hydroxide or a mixture thereof.

15. The organic photoreceptor of claim 13, wherein the chain extending agent is at least one selected from the group consisting of diol, triol, diamine, triamine, hydrazine and dihydrazide and having two reactive hydrogen atoms and having a molecular weight of 18 to 250.

16. The organic photoreceptor of claim 13, wherein an NCO content of the polyurethane prepolymer acquired is 0.1 to 30%.

17. The organic photoreceptor of claim 13, wherein water is used during dispersion for a total solid content to be 5 to 80% and a temperature of the water is in the range of 5 to 80°C.

18. The organic photoreceptor of claim 9, further comprising a polymerization initiator.

19. The organic photoreceptor of claim 9, further comprising water or a mixed solvent of water and alcohol for dilution, the water or mixed solvent being used for a total solid content of the overcoating composition to be 1 to 15%.

20. An electrophotographic imaging method using liquid toner and an organic photoreceptor for electrophotography, the organic photoreceptor comprising a photosensitive layer having an overcoat layer using an overcoating composition comprising an anionic aqueous polyurethane dispersion.

21. The electrophotographic imaging method of claim 20, wherein the liquid toner includes an aliphatic hydrocarbon solvent.

22. The electrophotographic imaging method of claim 20, wherein the anionic aqueous polyurethane dispersion is obtained by reacting at least one acid anhydride with or without a double bond with at least one kind of triol or tetraol derivatives to prepare a diol or triol monomer, or a mixture thereof containing a carboxyl group or containing both a carboxyl group and a double bond, reacting the resulting product with polyol, and diisocyanate or diisocyanate polymer to acquire a polyurethane prepolymer, neutralizing a carboxylic group of the acquired polyurethane prepolymer using a neutralizer and dispersing the same in water, followed by chain-extending using a chain extending agent.

23. The electrophotographic imaging method of claim 22, wherein the neutralizer is water-soluble tertiary amine, alkali metal hydroxide or a mixture thereof.

24. The electrophotographic imaging method of claim 22, wherein the chain extending agent is at least one selected from the group consisting of diol, triol, diamine, triamine, hydrazine and dihydrazide and having two reactive hydrogen atoms and having a molecular weight of 18 to 250.

25. The electrophotographic imaging method of claim 22, wherein an NCO content of the polyurethane prepolymer acquired is 0.1 to 30%.

26. The electrophotographic imaging method of claim 22, wherein water is used during dispersion for a total solid content to be 5 to 80% and a temperature of the water is in the range of 5 to 80°C.

27. The electrophotographic imaging method of claim 20, further comprising a polymerization initiator.

28. The electrophotographic imaging method of claim 20, further comprising water or a mixed solvent of water and alcohol for dilution, the water or mixed solvent being used for a total solid content of the overcoating composition to be 1 to 15%.

29. An organophotoreceptor comprising:

a photosensitive layer formed on an electrically conductive substrate, and an overcoat layer formed on the photosensitive layer, wherein the overcoat layer comprises an anionic aqueous polyurethane dispersion.

30. The organophotoreceptor according to claim 29, wherein the overcoat layer has a thickness of 0.1 to 5 μm.

31. The organophotoreceptor according to claim 29, wherein the photosensitive layer comprises a single-layered structure having a charge generating material and a charge transport material.

32. The organophotoreceptor according to claim 29, wherein the photosensitive layer comprises a dual-layered structure having a charge transport layer formed on the electrically conductive substrate and a charge generating layer formed on the charge transport layer.

33. The organophotoreceptor according to claim 32, wherein the charge transport layer is formed by coating a composition including a charge transport material, a binder and an organic solvent, and drying the resultant structure.

34. The organophotoreceptor according to claim 32, wherein the charge generating layer is formed by coating a composition including a charge generating material, a binder and an organic solvent, and drying the resultant structure.

35. The organophotoreceptor according to claim 33, wherein the charge transport material of the charge transport layer includes pyrazoline derivatives, fluorine derivatives, oxadiazole derivatives, stilbene derivatives, hydrazone derivative, carbazole hydrazone derivatives, polyvinyl carbazole, polyvinylpyrene and polyacenaphthylene.

36. The organophotoreceptor according to claim 33, wherein the binder of the charge transport layer includes a silicon resin, a polyamide resin, a polyurethane resin, a polyester resin, an epoxy resin, a polyketone resin, a polycarbonate resin, a polycarbonate copolymer, a polyestercarbonate resin, a polyformal resin, poly(2,6-dimethylphenyleneoxide), a polyvinylbutyral resin, a polyvinylacetal resin, a styrene-acryl copolymer, a polyacryl resin, a polystyrene resin, a melamine resin, a styrene-butadiene copolymer, a polymethylmethacrylate resin, polyvinylchloride, an ethylene-vinyl acetate copolymer, a vinylchloride-vinylacetate copolymer, a polyacrylamide resin, polyvinylcarbazol, polyvinylpyrazoline, polyvinylpyrene, and a polyester copolymer.

37. The organophotoreceptor according to claim 33, wherein the organic solvent of the charge transport layer includes aromatic solvents; ketone solvents; halide hydrocarbon solvents; and ether solvents.

38. The organophotoreceptor according to claim 34, wherein the charge generating material of the charge generating layer includes metal-free phthalocyanine and metal phthalocyanine.

39. The organophotoreceptor according to claim 34, wherein the binder of the charge generating layer includes polyvinyl butyral, polycarbonate, polyvinyl alcohol, poly(styrene-co-butadiene), modified acryl polymer, polyvinyl acetate, styrene-alkyd resin, soya-alkyl resin, polyvinyl chloride, polyvinylidene chloride, polyacrylonitrile, polyacrylic acid, polyacrylate, polymethacrylate, styrene polymer, alkyd resin, polyamide, polyurethane, polyester, polysulfone, polyether and mixtures thereof.

40. The organophotoreceptor according to claim 34, wherein the organic solvent of the charge generating layer includes alcoholic solvents, and acetate-based solvents.

41. The organophotoreceptor according to claim 29, further comprising a charge blocking layer formed between the photosensitive layer and the electrically conductive substrate.

42. An electrophotographic imaging method, the method comprising:

electrostatically charging a surface of an organic photoreceptor having an electrically conductive substrate;

exposing the charged surface of the organic photoreceptor to light, dissipating a charge in illuminated areas and forming a pattern of charged and uncharged areas;

depositing a liquid toner on the surface of the organic photoreceptor creating a toner image on the surface of the electrically conductive substrate;

transferring the toner image to a receiving surface;

repeating the imaging process a predetermined amount of times,

wherein the organic photoreceptor comprises a photosensitive layer formed on the electrically conductive substrate, and an overcoat layer formed on the photosensitive layer, wherein the overcoat layer comprises an anionic aqueous polyurethane dispersion.

43. An electrophotographic cartridge, comprising:

an electrophotographic organic photoreceptor comprising an electrically conductive support, and a photosensitive layer formed on the electrically conductive support;

a charging device that charges the electrophotographic organic photoreceptor;

a developing device which develops an electrostatic latent image formed on the electrophotographic organic photoreceptor; and

a cleaning device which cleans a surface of the electrophotographic organic photoreceptor and is attachable to or detachable from an image forming apparatus, and

wherein the photosensitive layer further comprises an overcoat layer composition comprising an anionic aqueous polyurethane dispersion.

44. A method of forming an electrophotographic organic photoreceptor comprising:

forming a photosensitive layer on an electrically conductive substrate, and

forming an overcoat layer on the photosensitive layer, wherein the overcoat layer comprises an anionic aqueous polyurethane dispersion.

45. The method according to claim 44, wherein the overcoat layer has a thickness of 0.1 to 5 μm.

46. The method according to claim 44, wherein the forming of the photosensitive layer comprises forming a single-layered structure having a charge generating material and a charge transport material on the electrically conductive substrate.

47. The method according to claim 44, wherein the forming of the photosensitive layer comprises forming a dual-layered structure having a charge transport layer formed on the electrically conductive substrate and a charge generating layer formed on the charge transport layer.

48. The method according to claim 47, further comprising forming the charge transport layer by coating a composition including a charge transport material, a binder and an organic solvent, and drying the resultant structure.

49. The method according to claim 47, further comprising forming the charge generating layer by coating a composition including a charge generating material, a binder and an organic solvent, and drying the resultant structure.